

EXHIBIT P

ENVIRONMENTAL ASSESSMENT AND RELATED INFORMATION

Combined Application of South Carolina Electric & Gas Company for a Certificate of Environmental Compatibility and Public Convenience and Necessity and for a Base Load Review Order Public Service Commission Docket No. 2008-196-E

1. INTRODUCTION

This **Exhibit P** provides a summary of the comprehensive Environmental Report related to the permitting, construction and placing into service of two Westinghouse AP 1000 Advanced Passive Safety Power Plant units at V. C. Summer Nuclear Station (VCSNS) Units 2 & 3 (the Units or the Facilities). SCE&G submitted the Environmental Report to the Nuclear Regulatory Commission (NRC) on March 31, 2008 as a part of its filing for a Combined Operating License for the Units. This **Exhibit P** also summarizes the geological, geotechnical and seismic information contained in the Combined Operating License Application for the Units.

An electronic copy of the Environmental Report is available on the NRC website. SCE&G will make electronic copies available to parties to this proceeding on request.

2. PROPOSED PROJECT

South Carolina Electric & Gas Company (SCE&G), an investor-owned utility, and South Carolina Public Service Authority, a state-owned utility commonly referred to as Santee Cooper, have determined that additional electrical generating capacity is needed to satisfy the growth projections for energy within their electric service areas and those of their re-sale customers in South Carolina. Their need-for-power analysis is documented in Chapter 8 of the Environmental Report submitted to the U.S. Nuclear Regulatory Commission (NRC) as part of an application for a license to construct and operate two nuclear power units at the current V.C. Summer Nuclear Station Unit 1 near Jenkinsville, South Carolina. Maps of the Facilities and its location are found in Exhibit A to this Application.

SCE&G has conducted its environmental impact studies and assessments for the VCSNS Units 2 & 3 in accordance with the regulatory parameters encompassed within the NRC's Environmental Standard Review Plan as contained in NUREG 1555, implementing provisions of Title 10, Code of Federal Regulations, Part 51 (10 CFR 51), "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," and other guidance related to new site/plant applications. The discussion that follows generally tracks the sections and subjects required to be addressed, and hence were those investigated, analyzed, and are reported upon in the Environmental Report (ER). The ER comprises the content of Part Three of the Combined Operating License (COL) filed by SCE&G with the NRC on March 31, 2008.

The two new units are to be Westinghouse AP1000 advanced light water reactors. Each AP1000 has a rated thermal power of 3,400 megawatts thermal with a net electrical output of

approximately 1,117 megawatts electric. Based on the engineering computations that were current when the Environmental Reports were finalized, the forecast output of the plant was 1,107 megawatts electric. These new generation units incorporate passive design features that significantly improve the safety of the reactor over existing nuclear plants.

Water is a primary resource consideration with any power plant. Its consumption, treatment, and thermal characteristics are carefully analyzed. The two units would use water from the Monticello Reservoir for plant cooling and for all other plant-related use or consumption. Each unit would use closed-cycle, wet cooling towers for both circulating water system cooling and service water system cooling. An intake structure located on the Monticello Reservoir west of the existing Unit 1 would supply circulating water system makeup water. A water treatment facility located along the Monticello Reservoir to the east of Unit 1, comprised of a water treatment plant with its own separate intake structure, would also supply water withdrawn from the Monticello Reservoir for service water system makeup and to the potable water system, fire protection system, and plant demineralized water supply system. Monticello Reservoir receives water from the Broad River (Parr Reservoir) through the Fairfield Pumped Storage Facility.

Plant water discharges have also been carefully studied. The blowdown water from the cooling towers discharges to Parr Reservoir. The temperature of this effluent is slightly elevated above the normal river water temperatures and contains enhanced levels of natural salts, as well as, occasionally, very low permitted levels of radioactivity.

Additional detailed description on the proposed project can be found in Chapter 3 of the Environmental Report.

3. AFFECTED ENVIRONMENT

The Affected Environment is a description of the existing environmental conditions at the VCSNS site, the site vicinity, and the region. The environmental descriptions provide sufficient detail to identify those environmental resources that have the potential to be affected by the construction, operation, or decommissioning of the new units. Chapter 2 of the Environmental Report provides greater detail.

The VCSNS site is defined as the approximately 2,560 acres within the site boundary that include VCSNS Unit 1, the Fairfield Pumped Storage Facility, the southern portion of the Monticello Reservoir, and the location of the proposed Units 2 and 3; plus approximately 1,000 acres south of the site boundary. This additional land would be involved in construction activities (temporary facilities, laydown areas, and spoils disposal areas) or contain easements for the discharge pipeline and the access road. Total area for the site is approximately 3,600 acres.

The largest use within the 2,560 acres enclosed by the VCSNS Unit 1 site boundary is mixed forest, comprising 1,110 acres. Approximately 784 acres of the area within the VCSNS Unit 1 site boundary are covered by the waters of the Monticello Reservoir. A significant portion of the property (approximately 492 acres) consists of urban or built up land including: generation and maintenance facilities, laydown areas, parking lots, roads, mowed grass, and transmission line

rights-of-way. Approximately 174 acres of the area within the VCSNS Unit 1 site boundary are classified as transitional areas that are barren land.

The topography of the site consists of low rolling hills carved by a creek and drainages with elevations ranging from approximately 560 feet to 210 feet above Mean Sea Level. The Mayo Creek crosses the VCSNS site from north to south and discharges into the Broad River downstream of the Parr Reservoir. Streamside management zones at the site are protected in accordance with best management practices established by the South Carolina Forestry Commission. Forested areas within the VCSNS site are actively managed by SCANA Services' Forestry Operations group, and timber is occasionally harvested. Once timber is removed, the harvested areas are replanted with tree species appropriate to the terrain, soils, and drainage characteristics of a site.

The vicinity within 6 miles of the site occupies portions of Fairfield, Newberry, and Richland Counties and is rural, with a few homes and small farms, but much undeveloped land. The topography of the vicinity consists of low rolling hills. The community of Jenkinsville is approximately 2 miles southeast of VCSNS. The town of Peak (census year 2000 population of 61) is approximately 1.5 miles south and Pomaria (census year 2000 population of 178) is approximately 7 miles to the west.

The 4,400-acre Parr Hydro Wildlife Management Area managed by the South Carolina Department of Natural Resources for public waterfowl hunting and fishing, is adjacent to the VCSNS site. The Wildlife Management Area includes designated lands within the Enoree District of the Sumter National Forest, the Broad River (SC 34 to the dam at SC 16), and the Monticello and Parr Reservoirs. Camping is allowed along the Broad River within the Sumter National Forest. Other recreation activities such as boating, picnicking, and hiking can be enjoyed at select locations on the Monticello Reservoir, Parr Reservoir, and Broad River, and on the southern portion of Enoree District of the Sumter National Forest.

With the amount of land resource committed to this project, an understanding of the ecological resources that have the potential to be impacted by the construction and operation of new nuclear units on the VCSNS site is essential. Both terrestrial and aquatic resources could potentially be impacted and have been carefully defined and studied, and adequate precautions instituted, to keep ecological impacts within acceptable limits.

The U.S. Fish and Wildlife Service (USFWS) is responsible for designating areas of "critical habitat" for federally listed endangered and threatened terrestrial species. Such areas are considered essential to the species' conservation, and may require special management and protection. No areas designated by the USFWS as critical habitat exist at or near the VCSNS site. "Critical habitat" or similarly defined classifications do not exist for State-listed species in South Carolina. A survey for federally and state-listed species classified as threatened or endangered was conducted in May 2002 at the VCSNS site. The bald eagle was the only federally or state-listed animal species observed at the site during the 2002 survey. The bald eagle is state-listed as endangered. The USFWS removed the bald eagle from the federal list of threatened and endangered species effective August 8, 2007. At the federal level, the bald eagle is still protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act.

Surveys for federally and state-listed species classified as threatened or endangered were conducted in June 2006, September 2006, April 2007, and October 2007 in areas that would be disturbed by proposed construction activities. No federally or state-listed plants or animals were found during the 2006 surveys. A juvenile bald eagle was observed along the eastern shoreline of Parr Reservoir during the April 2007 survey; no other federally or state-listed plants or animals were observed during the April 2007 survey. In addition, no federally or state-listed plants or animals were found on the existing transmission corridors.

SCE&G has sited the proposed facilities and infrastructure so as to minimize impacts to wetlands. The upper portion of one small intermittent stream and its associated wetland extend slightly into the area in which the cooling towers would be located. The heavy haul road would cross Mayo Creek and its associated narrow wetland. Otherwise, no streams or wetlands are located in areas in which facilities or structures would be located.

The surface water bodies of interest, i.e., those that could potentially be affected by construction and operation of new units at the VCSNS site, are the Broad River, Parr Reservoir, Monticello Reservoir, the Monticello Sub-impoundment, and onsite streams, most notably Mayo Creek. Routine and special surveys of fish populations were conducted as early as three years before the operation of Unit 1 and two years after the beginning of operations. The fish community of the Parr Reservoir appeared to be largely unaffected by operations of VCSNS. Likewise, after extensive surveys conducted by biologists, South Carolina Department of Natural Resources personnel, and contractors, there was no indication that Unit 1 operations had an effect on fish populations in the Monticello Reservoir. Other surface water bodies have been carefully studied and data from over long periods of time have been analyzed with no indication that aquatic populations have been adversely and permanently affected by operation of VCSNS. Fish conservation efforts continue in the Broad River with SCE&G partnering to restore naturally dwindling numbers of the robust redhorse (*Moxostoma robustum*), a large catostomid believed to be extinct until 1991.

Historic and cultural resources also can be potentially disturbed or damaged by new construction. To support the COL application, SCE&G performed cultural resource surveys of the VCSNS site and the adjoining SCE&G property potentially affected by construction of Units 2 and 3.

Properties listed on the National Register of Historic Places and structures and buildings that have been determined as eligible for the National Register were identified using the South Carolina Department of Archives' Cultural Resources Inventory System. SCE&G met with the State Historic Preservation Office in June 2006 regarding the VCSNS COL application. During the visit, past landscape alterations and current conditions were discussed, as well as any need for additional cultural resource surveys, and results of background site files and cartographic research.

There are known to be 21 archaeological sites and standing structures within 10 miles of the proposed site that are currently listed on the National Register of Historic Places. None are located on SCE&G property. Fifty three standing structures within a 10-mile radius have been

determined to be eligible or contributing to the eligibility of a National Register district. None of these are located on SCE&G property. No archaeological sites within the 10-mile radius have been determined eligible, although four are listed on the National Register. A cemetery containing approximately 30 graves including that of General John Pearson, a Fairfield County native who served with distinction in the American Revolutionary War, is partially within the proposed site boundary. SCE&G has fenced this cemetery, and SCE&G's Forestry Operations group is familiar with this cemetery, which is marked on their timber inventory and land cover maps. SCE&G takes measures to protect the cemetery when conducting forest management activities.

Although transmission line rights-of-way associated with Unit 1 have not been specifically systematically surveyed for cultural resources, no known significant archaeological sites or standing structures currently exist within them. The routes of the new transmission lines have not yet been determined but they would follow the existing routes where possible. New corridors would be thoroughly researched to avoid disturbing cultural or historical resources.

The Catawba Indian Nation is the only federally recognized tribe in South Carolina. There are no tribal lands in the VCSNS vicinity.

4. IMPACT OF CONSTRUCTION

SCE&G examined the potential environmental impacts of construction of VCSNS Units 2 and 3. In accordance with 10 CFR 51, impacts are analyzed, and a single significance level of potential impact to each resource (i.e., small, moderate, or large) is assigned consistent with the criteria that NRC established in 10 CFR 51, Appendix B, Table B-1, Footnote 3 as follows:

SMALL Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource. For the purposes of assessing radiological impacts, the Commission has concluded that those impacts that do not exceed permissible levels in the Commission's regulations are considered small.

MODERATE Environmental effects are sufficient to alter noticeably, but not to destabilize, any important attribute of the resource.

LARGE Environmental effects are clearly noticeable and are sufficient to destabilize any important attributes of the resource.

The following environmental or sociological resource areas were evaluated as having **SMALL** impacts:

- Land Use
- Water use
- Water Quality
- Terrestrial Ecology
- Aquatic Ecology
- Public and Worker Health (radiological and nonradiological)

Impacts other than SMALL are discussed below:

Land use for new transmission lines are expected to have MODERATE impacts; however, the exact routes of these transmission lines are not currently known. SCE&G would follow siting procedures established by the South Carolina Public Service Commission. Santee Cooper would follow a technically comparable process for their transmission lines.

SCE&G estimates that most in-migrating construction workers and their families would leave the region upon project completion, and residential and commercial activity would return to approximately preconstruction levels. Therefore, offsite land-use changes would be small, thus, the impact would be considered SMALL in surrounding counties of Lexington, Richland, and Newberry, but MODERATE in Fairfield County.

Commuting construction workers would have a MODERATE to LARGE impact on the traffic on two-lane highways in Fairfield and Newberry County, specifically SC 215, SC 213, and the highways that feed into them. Mitigation, such as staggering shifts, infrastructure improvements, and traffic management planning, would be necessary to accommodate the additional vehicles on SC 215 and 213.

The large construction project would reduce unemployment and create business opportunities for housing and service-related industries. SCE&G concludes that the impacts from construction on the economy or labor force in the region of influence would be SMALL in Lexington, Newberry, and Richland Counties. The impacts in Fairfield County would be LARGE because the proposed project is located in the county and because the county currently has such a small labor pool and population base. Changes to population and employment baselines would result in a LARGE impact in Fairfield County.

SCE&G concludes that the potential beneficial impacts from all types of taxes collected during construction period in various forms (personal income, business income, inventory, payroll related, sales, and personal and real property, etc) would be LARGE in Fairfield County and SMALL in Newberry, Lexington, and Richland Counties.

Chapter 4 of the Environmental Report provides greater detail on construction impacts.

5. IMPACTS OF OPERATION

SCE&G also examined the potential environmental impacts of operation of VCSNS Units 2 and 3. In accordance with 10 CFR 51, impacts are analyzed, and a single significance level of potential impact to each resource (i.e., small, moderate, or large) as defined in Section 3. The following environmental or sociological resource areas were evaluated as having SMALL impacts:

Land Use
Water use
Water Quality

Terrestrial Ecology
Aquatic Ecology
Public and Worker Health (radiological and nonradiological)

Impacts other than SMALL are discussed below:

The commuting of the combined operations workforce for all three units would have a SMALL to MODERATE impact on the traffic on two lane highways in Fairfield and Newberry County, specifically SC 215 and 213 and the highways that feed into them. Mitigation, such as staggering shifts, infrastructure improvements, and a traffic plan, would be necessary to accommodate the additional vehicles on SC 215 and 213.

In the general region, impacts of operations on the economy would be beneficial and SMALL, but economic impacts to Fairfield and Newberry counties would be MODERATE because of their rural nature and because of the significant impacts that operations would have on the tax base of Fairfield County. One of the main sources of economic impact would be property taxes assessed on the facility. A second source of property taxes would be on housing owned by the new workforce.

Chapter 5 of the Environmental Report provides greater detail on operational impacts.

6. ALTERNATIVES

SCE&G evaluated possible alternatives to construction and operation of new nuclear units at the VCSNS site.

The no-action alternative (doing nothing more than is currently being done) is not a viable alternative assuming a reasonable rate of growth in electricity demand within South Carolina.

Several alternatives exist that do not require new generating capacity, such as purchasing power from other utilities, reactivating or extending the life of current power systems, managing demand, or a combination of these alternatives. Some power is already purchased but additional purchases would not be adequate to provide the required increase in base load capacity projected into 2015. SCE&G has already extended the life of VCSNS Unit 1 and has not identified any other existing plants that could undergo life extension to meet the project demand

Demand side management is the practice of reducing customers' demand for energy through programs such as energy conservation, efficiency, and load management so that the need for additional generation capacity is eliminated or reduced. Many programs are being implemented already, and there is not much more to be gained from this alternative.

Alternative technologies such as wind, solar, hydroelectric, geothermal, biomass, municipal solid waste, petroleum liquids, fuel cells, coal, natural gas, and combinations of alternative technologies have been evaluated. Alternative technologies are worthy of additional investigation in terms of the national energy supply options. Many of them may have important

contributions to make to the energy mix, but most, for various reasons, especially in South Carolina, cannot provide the energy needed in the amounts required.

SCE&G has determined, based on environmental impacts, that neither a coal-fired nor a gas-fired plant would provide an appreciable reduction in overall environmental impact relative to a nuclear plant. This conclusion is shown in detail in Chapter 9 in the Environmental Report. Furthermore, each of these types of plants would entail a significantly greater relative environmental impact on air quality than would the proposed project. Therefore, SCE&G concludes that neither a coal-fired or gas-fired plant would be environmentally preferable to the proposed project.

Alternative sites were also considered. Impacts associated with alternative sites were compared. The comparison studied the environmental impacts of construction and operation of the proposed project at each of the alternative sites with impacts at the VCSNS site. This site-by-site comparison did not result in identification of a site obviously superior to the VCSNS site.

SCE&G also examined the use of direct cooling (without cooling towers) from the Monticello Reservoir and the use of natural draft cooling in lieu of mechanical draft cooling towers. Neither of these alternatives was found to be technically, economically, or environmentally preferable.

7. SUMMARY OF GEOLOGIC, GEOTECHNICAL AND SEISMIC STUDIES

South Carolina Electric & Gas Company also investigated the geological, seismological and geotechnical characteristics of the proposed location of the V.C. Summer Nuclear Station, Units 2 & 3 to confirm that the site was safe for the construction and operation of new nuclear power plants. The investigation also provided information on geotechnical and seismic site characteristics for input into site specific aspects of the power plant design.

The geologic investigation consisted of both regional and site studies. The geological and seismological information is presented in detail in Section 2.5 of the Final Safety Analysis Report and summarized in Section 2.6 of the Environmental Report. This information was developed from a review of previous reports prepared for the V.C. Summer Unit 1 investigation, published geologic and seismologic literature, interviews with experts in the geology and seismicity of the region surrounding the site, aerial photo analysis and geologic field reconnaissance conducted as part of the of the Unit 2 & 3 investigation. Office studies also evaluated regional geophysical maps (gravity and magnetism) to identify geologic structures deep in the earth's crust and those exposed at the ground surface. Field work included drilling 111 boreholes, conducting 36 cone penetrometer tests, installing 31 groundwater observation wells, and excavating 4 test pits at the Units 2 and 3 sites. Four deep boreholes were drilled at the site of each nuclear island; one to 350 ft, one to 215 ft, and two to 175 ft. Downhole geophysical surveys were performed in each of these boreholes. Geophysical testing included the use of a compression wave-shear wave (P-S) suspension logging tool to measure the shear wave velocity of the bedrock, a parameter important to calculating earthquake vibratory ground motions. Borings at the site provided the geological and geotechnical data to characterize the soil, underlying rock and geophysical properties of the soil and bedrock units.

The field investigation program was supplemented by a laboratory testing program to characterize material properties of both the soil and rock. SCE&G obtained values for standard engineering properties of the soils, weathered rock, sound rock, and potential backfill obtained from a local quarry. In addition, resonant column torsional shear tests were conducted on both native soils and backfill to help define the dynamic behavior of these materials.

The investigation verified that the site location is typical of the Piedmont physiographic province. The site topography consists of gently to moderately rolling hills and well-drained mature valleys. Most of the local terrain is mantled by residual soils and saprolite overlying the more-than 300 million year old Winnsboro granitic plutonic complex that intruded older metamorphic country rock consisting of deformed gneiss and amphibolite. The geotechnical data indicate that soils overlying the hard bedrock vary from highly weathered residual soils (consisting of silt and silty sand with variable clay content) to saprolite (consisting of completely weathered rock that retains relict rock structure).

The soil beneath the nuclear islands will be excavated down to sound rock and the structures of the nuclear island important to safety will be founded on sound rock or on concrete placed on sound rock. The non-safety-related annex building will be founded on structural fill placed on sound rock. Permanent perimeter slopes in the soil are at least 600 feet away from the nearest point of the nuclear islands, and at least 500 feet away from the nearest point of the non-safety-related annex buildings. Failure of these slopes, under any of the conditions to which they could be exposed during the life of the plant, will not adversely affect the safety of the nuclear power plant facilities. The temporary slopes that will be excavated for plant construction will be backfilled prior to plant operation and, therefore, will not affect the safety of the nuclear power plant facilities.

The seismic investigation consisted of a systematic evaluation of historic earthquakes and seismic (earthquake) source zones relevant to determination of the seismic hazard at the site. The earthquake catalog developed in the late 1980s by the Electric Power Research Institute and reviewed by the Nuclear Regulatory Commission was updated to incorporate earthquakes that had occurred since its publication. The assessment of vibratory ground motion incorporates developments in ground motion estimation models; updated models for earthquake sources; methods for determining site response; and new methods for defining a site-specific, performance-based earthquake ground motion [the Ground Motion Response Spectra (GMRS)] which is characterized by horizontal and vertical response spectra determined as free-field motions on hard rock.

The site-specific probabilistic seismic hazard analysis performed for Units 2 and 3 incorporates the updated earthquake catalog, and updated models of the Charleston (South Carolina) and New Madrid (Missouri) Seismic Source Zones. These two updated models incorporate the results of recent research integrating information on geologic structures and earthquake recurrence. Uncertainties in geologic and seismologic parameters are explicitly incorporated in this hazard assessment.

The geologic investigation conducted for the V.C. Summer site indicates that there are no active faults within a 200-mile radius. In addition, there is no potential for surface fault rupture within a 5-mile radius of the site. The results of the geologic, geotechnical and seismological investigations indicate that the V.C. Summer Units 2 & 3 site meets the design requirements for the Westinghouse AP1000 reactor design as certified by the U. S. Nuclear Regulatory Commission.